

expressed in two individual creatures, the maturely sexual male and female. Both in the animals which we are here considering and in all others which are subject to the law of alternation of generations, and of which the different steps of development are represented by different individual creatures endowed with peculiar attributes, the idea of the species will only be rendered complete by the inclusion of the characters of the whole of the generations following each other in cyclical evolution.

In the present position of science it will undoubtedly be both easier and more advisable to take the Hydroid polypes (nurse-animals) as the foundation of the classification of the lower Medusæ, and to unite with each species the Medusa produced from it, but also to take sufficient notice, in the specific characters, of both generations—*Proles hydriformis* as well as *Proles medusiformis*.

That in the meanwhile we continue, as before, to indicate every newly observed nurse-form (Hydroid polype) as well as the free-swimming Medusæ, or both generations, by a proper provisional name, by no means tends, like the rest of the crowd of synonyms, to the further encumbrance of science. Nothing is easier than subsequently, when the other generation is known, to bring both forms together and to indicate them either by a single definite name, or, as has been done, for example, in the case of the Salpæ, by a double specific name.

XXXVI.—*A Catalogue of the Zoophytes of South Devon and South Cornwall.* By the Rev. THOMAS HINCKS, B.A.

[Continued from p. 297.]

Order LUCERNARIDÆ, Huxley. Fam. Lucernariadæ.

LUCERNARIA, Müller.

1. *L. auricula*, Fabr.

Common on weed near low-water mark: Littleham, near Exmouth; Petit Tor, near Torquay, &c.

2. *L. campanulata*, Lamx.

Torbay (*Dr. Coldstream*).

Class ACTINOZOA, Huxley.

Order ZOANTHARIA, Milne-Edwards (pars). Fam. Actiniadæ.

1. ACTINOLOBA, Blainville.

A. dianthus, Ellis.

Common: large colonies amongst the trawl-stuff, Brixham; on oysters, &c.

2. *SAGARTIA*, Gosse.1. *S. bellis*, Ellis and Solander.

Extremely abundant in tide-pools; crowded together in holes and crevices in the rocks.

2. *S. miniata*, Gosse.

Abundant: dredged in Salcombe Bay; Torquay, Dartmouth, Plymouth (*Gosse*).

3. *S. rosea*, Gosse.

About low-water mark, South-Devon coast, not uncommon.

4. *S. ornata*, Holdsworth.

Dartmouth (*E. W. H. Holdsworth*); Torquay (*Gosse*).

5. *S. ichthystoma*, Gosse.

A single specimen taken at the Ore Stone, Torbay, by the Rev. W. F. Short.

6. *S. venusta*, Gosse.

Torquay (*Gosse*).

7. *S. nivea*, Gosse.

Salcombe, between tide-marks; Dartmouth, not uncommon (*Holdsworth*); Torquay (*Gosse*).

8. *S. sphyrodeta*, Gosse.

Under ledges of rock at the base of the cliff, Littleham, near Exmouth, not common. The "tendency to a pendent posture," noticed by Mr. Gosse, is very characteristic. Dartmouth (*Holdsworth*).

9. *S. pallida*, Holdsworth.

Dartmouth (*Holdsworth*); Torquay (*Gosse*).

10. *S. coccinea*, Müller.

Cornwall (*Peach*); Torbay, abundant in deep water (*Gosse*).

11. *S. troglodytes*, Johnston.

Not common: Teignmouth (*Prof. R. C. Jordan*); Torquay (*Gosse*).

12. *S. viduata*, Müller.

Torquay, abundant (*P. H. G.*); Dartmouth (*Holdsworth*).

13. *S. parasitica*, Couch.

Common: Torbay, Salcombe, Exmouth, &c.; always on *Buccinum undatum*.

3. ADAMSIDIA, Forbes.

A. palliata, Bohadsch.

Common in Salcombe Bay, on various kinds of *Trochus*, always associated with a species of Hermit-crab; Torbay (*Gosse*).

4. PHELLIA, Gosse.

1. *P. murocineta*, Gosse.

Petit Tor, near Torquay (*P. H. G.*).

2. *P. gausapata*, Gosse.

Deep water, Torbay (*P. H. G.*).

5. ANTHEA, Johnston.

A. cereus, Ellis & Solander.

Very abundant, in rock-pools and in shallow water near the shore. At Salcombe multitudes of the grey variety are met with studding the slender leaves of the *Zostera marina*, from which they hang like blossoms, waving to and fro with every movement of the water.

Mr. Robert Patterson has described the *Anthea* as occurring to him in a similar situation in Belfast Lough.

The var. *smaragdina* is very common, often forming a most exquisite fringe along the edges of the tide-pools.

The *Anthea* is found on the west coast of Scotland; but I have never met with it on the Yorkshire coast, and it is wanting in Mr. Alder's Durham and Northumberland Catalogue.

6. ACTINIA, Linnæus.

A. mesembryanthemum, Ellis & Solander.

Extremely common throughout the upper zone of the littoral region.

7. BUNODES, Gosse.

1. *B. gemmacea*, Ellis & Solander.

Not uncommon between tide-marks: Exmouth, Salcombe (abundant), Torbay.

2. *B. Ballii*, Cocks.

Torquay (*Gosse*).

3. *B. coronata*, Gosse.

Occasionally in moderately deep water (about 20 fathoms).

8. TEALIA, Gosse.

T. crassicornis, Müller.

Very common, in pools and clefts near low-water mark; also from deep water.

Fam. *Plyanthiadæ*.1. *PEACHIA*, Gosse.*P. hastata*, Gosse.

“Torbay, at extreme low water, and thence downward, buried in sand” (*P. H. G.*).

2. *HALCAMP*A, Gosse.1. *H. chrysanthellum*, Peach.

Fowey, Cornwall; buried in sand at low water and in tide-pools (*C. W. Peach*).

2. *H. microps*, Gosse.

In eroded limestone, Oddicombe, S. D. (*Gosse*).

3. *EDWARDSIA*, Quatrefages.1. *E. callimorpha*, Gosse.

Dredged off Brixham (*Rev. C. Kingsley*).

2. *E. carnea*, Gosse.

The Orestone, Torbay (*Miss Pinchard*); Petit Tor, in the old burrows of *Saxicavæ* (*P. H. G.*).

3. *E. Beautempsii* (?), Quatrefages.

Torquay (*Rev. C. Kingsley*).

Fam. *Capneadæ*, Gosse.*CORYNACTIS*, Allman.*C. viridis*, Allman.

Abundant, in clusters between tide-marks.

In a rock-pool at Salcombe I once found a stone of small size which bore upon it a group of no less than thirty of these little gems, of the brightest green colour, and with vivid ruby tips to the arms. Another variety, from the same place, had the column of a beautiful rose-colour, the tentacles fawn, and a ring of yellow round the outside of the disk.

Fam. *Zoanthiadæ*.*ZOANTHUS*, Cuvier.1. *Z. Couchii*, Johnston.

Not uncommon: Salcombe Bay, on slate, stone, &c. (in about 12–15 fathoms); Cornwall (*Couch*); Torbay, 12 fath. (*Holds-worth*).

The *Mammillifera arenacea* of Sars's ‘Middelhavet's Littoral-

Fauna' is identical with this species. He obtained it at Naples, in from 10-20 fathoms' depth.

2. *Z. sulcatus*, Gosse.

Mr. Gosse mentions a single colony of this pretty but very minute species as having occurred to him at Broadsands, near Brixham, on sandstone rock. On the opposite side of Torbay, however, and very close to Torquay, I have found it abundantly in the small basins hollowed out in the limestone, which I have before referred to as yielding the *Clavatella prolifera*.

The *Zoanthus* forms little colonies on the floor of these miniature pools; but they may readily be passed over as tufts of some minute weed.

3. *Z. rubricornis*, Holdsworth, Proc. Zool. Soc. March 12, 1861.

This species has lately been described by Mr. Holdsworth, who obtained it in Plymouth Sound, at a depth of 20 fathoms.

Fam. Caryophylliadae.

1. CARYOPHYLLIA, Lamarck.

C. Smithii, Stokes.

Common, near extreme low-water mark: Torbay, Salcombe, Dartmouth, Polperro, &c. Dredged off Berry Head.

2. SPHENOTROCHUS, Milne-Edwards.

S. Macandrewanus, M.-Edwards.

I insert this species in the catalogue on the strength of a very minute specimen which I found amongst some shell-sand brought in by trawlers to Plymouth. I have had very fine examples from Mr. Barlee, which were dredged off some part of the Cornish coast, but beyond the limits of my present district. Mr. Macandrew has also taken it in the same region, on clean sandy ground.

3. HOPLANGIA, Gosse.

H. durotrix, Gosse.

Mr. Laughrin has supplied me with a specimen of this interesting Coral from the coast of Cornwall. It had only been found previously in Weymouth Bay. In this specimen a single small and imperfectly developed Corallite buds from the spreading base of a full-grown individual. In the case of another Corallite on the same piece of rock, there is no appearance of any basal expansion.

4. BALANOPHYLLIA, Wood.

B. regia, Gosse.

On stone dredged in five fathoms, Landtivet (?) Bay, coast of Cornwall. Five or six fine specimens occur on a single piece of rock from the above locality. Plymouth Sound (*T. H. Stewart*).

Order **ALCYONARIA**, Milne-Edwards. Fam. Alcyoniadæ.1. **ALCYONIUM**, Linnæus.*A. digitatum*, Linn.

Very common, in shallow and deep water.

2. **SARCODICTYON**, Forbes.*S. catenata*, Forbes.

Ilsum, near Torquay, on rock at extreme low-water mark (*Gosse*): *vid.* Ann. Nat. Hist. ser. 3. vol. ii. (1858), p. 276.
[On stones from deep water, off the coast of Antrim.]

Fam. **Pennatulidæ**.**PENNATULA**, Linnæus.*P. phosphorea*, Linn.

This is included among Devon species, on the authority of Turton and Kingston ('Nat. Hist. of Torquay, Dawlish, and Teignmouth'). We can hardly suppose that they were mistaken about so marked a form. But the *Pennatula* must be of extreme rarity on the western coast, as we have, I believe, no other record of its occurrence.

It is abundant along the coast of Norway, as well as on our own northern shores, and is included also in the Mediterranean 'Littoral-Fauna' of Sars; but this author states that the southern form is much inferior in size to the northern.

Fam. **Gorgoniadæ**.**GORGONIA**, Linnæus.*G. verrucosa*, Linn.

Common along the coasts of Devon and Cornwall, in about 30-40 fathoms' depth.

Sars informs us that in the Grotto of Nisita, where at midday there is only twilight, the *Gorgonia* occurs frequently, attached to the precipitous walls of rock, at a depth of from half a fathom to a fathom below the surface of the sea. In this situation it grows to the height of one foot.

G. verrucosa is found elsewhere in the Mediterranean at a depth

of from 10 to 20 fathoms, and on our own coast is obtained universally in deep water. Its occurrence so near the surface in the Grotto is an exceptional case, and is dependent, no doubt, on the peculiar character of the locality, which in many respects must resemble its more usual habitat.

I have reason to believe that a second species of *Gorgonia*, somewhat allied to the *verrucosa*, is met with on our western coast, but I am not yet in a position to speak with confidence about it.

[To be continued.]

XXXVII.—*Further Observations on the Structure of Foraminifera, and on the larger Fossilized Forms of Scinde, &c., including a new Genus and Species.* By H. J. CARTER, Esq., F.R.S.

[Continued from p. 333.]

Further Observations on the larger Fossilized Forms of Foraminifera in Scinde, &c.

OPERCULINA, D'Orbigny.

“2. *O.* —?”—See my first paper on the larger forms of Foraminifera in Scinde, &c. (Ann. & Mag. Nat. Hist. vol. xi. p. 167, 1853). This *Operculina*, which I did not like to name, as I did not know whether or not it was a new species, has been called by MM. d'Archiac and Haime (p. 347) “*O. Tattaensis*,” after the place where it was found.

Obs.—*Operculina* is much more nearly allied to *Assilina* than *Assilina* to *Nummulites*. *N. spira*, which is an *Assilina*, is but a gigantic *Operculina* with enlarged spicular cord.

ASSILINA, D'Orb.

“1. *A. irregularis*, H. J. C.” (Ann. Nat. Hist. l. c. p. 168).—This has been rightly identified by D'Archiac and Haime (p. 343) with *N. spira*, De Roissy. Nevertheless it is an *Assilina* according to D'Orbigny's definition, and so closely allied to *Operculina* that the spicular cord and the septa of the chambers (that is, the spire altogether) are, with the exception of the central part, as visible as in *Operculina*.

*Largest size**.—Breadth $\frac{1\frac{7}{8}}{1\frac{1}{2}}$ inch ($36\frac{1}{2}$ millim.).

Loc. Valley of Kelat (Dr. Cook)†.

Associates.—*Assilina exponens*, with varieties *a* and *b*, *A.*

* “Largest size” means the largest in my possession; “breadth” means the longest horizontal diameter; and “thickness” the greatest diameter at right angles to this.

† Dr. Cook, Bombay Army, late Medical Officer to the British Agency at Kelat. The name thus attached indicates the source from which the fossil was obtained.